What is claimed is:

1. A method of selecting in real time a soil stabilizing protocol for clay-bearing soils occurring in construction sites, comprising the steps of:

obtaining and logging soil conductivity data values at selected locations within a defined site without disturbing the surface of the soil thereof;

correlating the soil conductivity data values with corresponding estimates of soluble sulfate levels;

recommending a calcium-based soil stabilizing protocol if the estimated level of soluble sulfates is less than a predetermined threshold; and

performing a laboratory analysis of soil samples from selected portions of the defined site wherein the estimated soluble sulfate concentration equals or exceeds the predetermined threshold.

2. The method of claim 1, wherein the step of obtaining comprises the steps of:

scanning the defined site, without disturbing the surface of the soil, with a portable magnetometer to provide a plurality of soil conductivity data values, each at one of a plurality of respective selected surface locations in the defined site; and

logging the soil conductivity data values at the selected surface locations in the defined site into a predetermined storage device.

3. The method of claim 2, wherein the step of scanning comprises the steps of;

selecting surface locations corresponding to positions on a predetermined grid overlaying a map of the defined site; and

taking a measurement data value of soil conductivity at each selected surface location.

4. The method of claim 2, wherein the step of logging comprises the steps of:

fixing the data value in a stored from; and

associating a corresponding surface location with each data value.

5. The method of claim 1, wherein the step of correlating comprises the steps of:

applying a conversion approximation to the soil conductivity data values to estimate the level of soluble sulfates;

adjusting the estimated level of soluble sulfates for the level of sodium chloride in the soil of the defined site; and

mapping accumulated soil conductivity data values stored into one of a first set or a second set of data values onto a site map, wherein each data value in each first or second set is associated with a corresponding surface location.

6. The method of claim 5, wherein the step of applying a conversion approximation comprises the step of:

associating a level of soluble sulfates of 3000 parts per million (ppm) with a measured soil conductivity data value of 280 milliSiemens per meter.

7. The method of claim 5, wherein the step of adjusting the estimated level comprises the step of:

dividing the estimated level by a factor given by the average of the number of soluble sulfates divided by the total number (soluble sulfates + sodium chloride ions) of soluble ions in the soil of each of a plurality of representative soil samples of the defined site as determined by laboratory analysis of the representative soil samples from the defined site.

8. The method of claim 5, wherein, in the step of mapping, data values below a predetermined threshold are stored in the first set and data values equal to or above the predetermined threshold are stored in the second set.

9. The method of claim 8, wherein the predetermined threshold is a concentration of soluble sulfates of 3000 parts per million.

10. The method of claim 1, wherein the step of recommending comprises the steps of:

recommending a calcium-based soil stabilizing protocol if the estimated level of soluble sulfates is less than 3000 ppm.

11. The method of claim 1, wherein the step of performing a laboratory analysis comprises the step of:

performing a laboratory analysis of soil samples from selected portions of the defined site wherein the estimated soluble sulfate concentration equals or exceeds 3000 ppm; and

updating the soil conductivity data values logged during the step of obtaining.

12. The method of claim 2, wherein the steps of scanning and logging are performed by a single portable magnetometer, easily carried by one person and which provides a real time readout of the soil conductivity data values.

13. The method of claim 2, wherein the steps of obtaining and correlating are performed automatically under the control of a computer coupled via a computer interface to the portable magnetometer.

14. The method of claim 13, wherein the computer interface comprises a data link between the computer and the portable magnetometer.

15. The method of claim 4, wherein the step of associating a corresponding surface location with each data value comprises the steps of:

associating a global positioning system (GPS) locating device with the portable magnetometer;

coupling an output having coordinate information from the GPS device to the portable magnetometer; and

storing the coordinate information for the portable magnetometer with the data values fixed into stored form.

16. The method of claim 1, wherein, after the step of obtaining, further comprising the steps of:

establishing a data interface between a portable magnetometer used to obtain the soil conductivity values and a computer used to control the operation of the portable magnetometer; and

coupling a global positioning system (GPS) device to the portable magnetometer for providing to the computer via the data interface location data corresponding to each soil conductivity data value for use in mapping the data values for the defined site.